

# PATENT ABSTRACTS OF JAPAN

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(71)Applicant : Y E DATA INC

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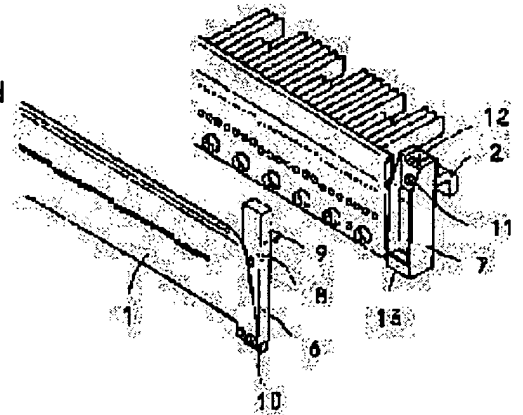
(72)Inventor : MIYAMOTO ATSUSHI

## (54) DOT IMPACT PRINTER

### (57)Abstract:

**PROBLEM TO BE SOLVED:** To provide a dot impact printer in which a ribbon mask can be easily set, detached in a short time while a hammer bank is fixed, and positions of a printing pin and a window hole of the ribbon mask can be determined correctly.

**SOLUTION:** A mold engaging part 6 having a positioning hole 8 and a hook 9 with a projection in a direction of the positioning hole is fixed to each end in a reciprocation direction of a ribbon mask 1. A holder 7 is mounted to each end in a reciprocation direction of a hammer bank 2, which has a positioning projection 11 to be engaged with the positioning hole 8 of the mold engaging part 6 fixed to each end of the ribbon mask 1, a wall part 12 for catching the hook 9 of the mold engaging part 6, and a wall part 13 at a front face of a lower end for pressing a leading end of the mold engaging part 6.



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CLAIMS

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[Claim(s)]

[Claim 1] A dot impact printer which was equipped with a ribbon mask for preventing dirt of a print form by ink ribbon between a hammer bank which prints while carrying out both-way migration of providing the following in the direction of a printing digit by which it is characterized, an ink ribbon which runs a front face of a hammer bank, an ink ribbon, and a print form, and attached this ribbon mask in a hammer bank To the both-way migration direction ends of said ribbon mask, it is a locating hole. A locating lug which engages with a locating hole of mold stop components which fixed mold stop components which have a hook which has a projection in the direction of the locating hole, and were fixed to the both-way migration direction ends of said hammer bank by said ribbon mask ends A wall for hooking a hook of said mold stop component A wall of a front face of a soffit for pressing down a head of mold stop components

[Claim 2] A dot impact printer according to claim 1 characterized by making it a projection configuration which engages with a criteria location hole for positioning of a printing pin which formed a positioning means at the time of attaching a holder in a hammer bank in a hammer bank.

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## DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[The technical field to which invention belongs] This invention relates to the dot impact printer used as output units, such as a computer.

[0002]

[Description of the Prior Art] Drawing 1 shows a hammer bank of the conventional dot impact printer, and the ribbon mask 1 is being fixed to the hammer bank 2 with the screw 3.

[0003] And the ribbon mask 1 attached in the hammer bank 2 of this dot impact printer is between a print form and an ink ribbon, and aims at preventing the dirt of the print form by the ink ribbon.

[0004] Moreover, the ribbon mask 1 was made with the thin stainless plate, and since it wore out by friction with a print form or an ink ribbon, it needed periodical maintenance inspection and exchange.

[0005] However, the ribbon mask 1 which is the conventional dot impact printer is because of being fixed to the hammer bank 2 with the screw 3 as mentioned above. The activity is dramatically difficult, exchange of the ribbon mask 1 removing a screw 3, and fixing the hammer bank 2 to a printer. Moreover, when attaching the ribbon mask 1 in the hammer bank 2, doubling the location of two or more printing pins 4 of the hammer bank 2, and the location of the window hole 5 for letting the printing pin which was able to be opened in the ribbon mask 1 pass, it needed to fix with the screw 3 and time and effort was taken to mounting.

[0006]

[Problem(s) to be Solved by the Invention] Then, this invention offers the dot impact printer which a ribbon mask can be detached and attached easily in a short time, and can determine the location of a printing pin, and the location of the window hole of a ribbon mask as accuracy, with a hammer bank fixed.

[0007]

[Means for Solving the Problem] It is what was made in order that this invention might solve the above-mentioned technical problem. To the both-way migration direction ends of a ribbon mask A locating lug which fixes mold stop components which have a hook which has a projection in the direction of a locating hole and its locating hole, and engages with a locating hole of mold stop components of said ribbon mask ends to ends of the both-way migration direction of a hammer bank, A holder which has a wall for hooking a hook of mold stop components and a wall of a front face of a soffit for pressing down a head of mold stop components is formed.

[0008] Moreover, in case a holder is attached in a hammer bank, in order to double a location of a window hole of a printing pin and a ribbon mask with accuracy, it is also an effective means to use a location hole for positioning of a printing pin of a hammer bank also [ locating hole / of installation criteria of a holder ].

[0009]

[Function] In the dot impact printer constituted as mentioned above, installation of a ribbon mask is easily attained to a hammer bank by hooking on a holder the hook which inserted the head of mold stop components inside the front face of a holder soffit, and the locating hole of mold stop components and the locating lug of a holder were made engaged, and was prepared in mold stop components.

[0010] Moreover, removing easily is possible by pulling up the upper bed of mold stop components to a ribbon mask side to a hammer bank in a derrick down and the upper part. Furthermore, it becomes possible by using the location hole for positioning of the printing pin of a hammer bank also [ location hole / of the installation criteria of a holder ] to double the location of the window hole of a printing pin and a ribbon mask with accuracy.

[0011]

[Embodiment of the Invention] Drawing 2 is the decomposition perspective diagram of one example of this invention,

fixes to the ends of the ribbon mask 1 the mold stop components 6 which have a location hole 8 and hook 9, and has attached in them the holder 7 which has the locating lug 11 which engages with a location hole 8 to the ends of the hammer bank 2, the wall 12 for hooking hook 9, and the wall 13 of the front face of a soffit for pressing down the head 10 of the mold stop components 6.

[0012] Drawing 3 shows the example from which a holder 7 differs, uses the location hole 14 for positioning of the printing pin 4 of the hammer bank 2 also [ location hole / at the time of attaching a holder 7 ] in this case, makes the installation criteria projection 15 of a holder 7 engaged, and is fixed with a screw 16.

[0013] Drawing 4 is explanatory drawing showing how to attach the mold stop components 6 and a holder 7, and attaches the mold stop components 6 in a holder 7 in order of (\*\*), (\*\*), and (Ha).

[0014]

[Effect of the Invention] As mentioned above, the ribbon mask 1 can be detached and attached easily and, moreover, the location of the printing pin 4 of the hammer bank 2 and the location of the window hole of the ribbon mask 1 can be doubled with accuracy, attaching the hammer bank 2 in a printer according to this invention.

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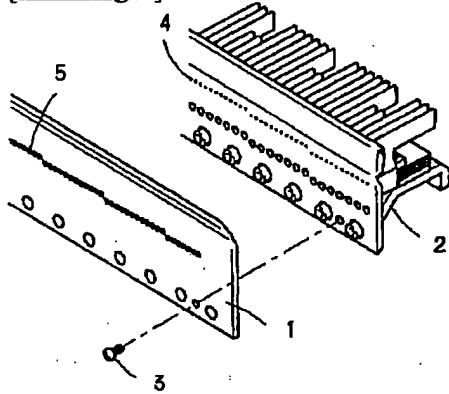
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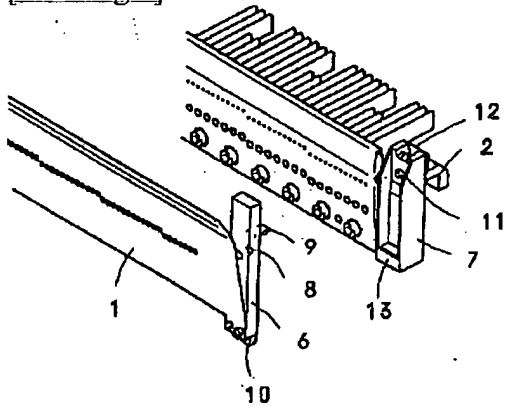
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## DRAWINGS

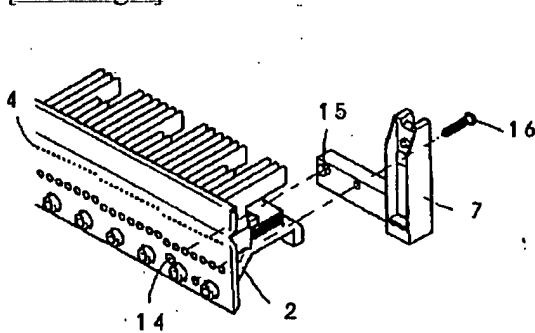
[Drawing 1]



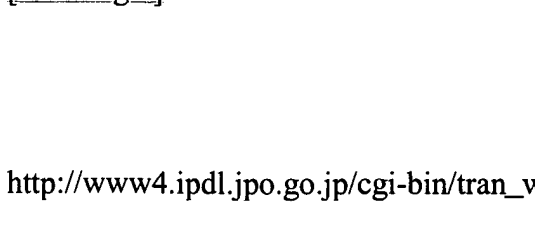
[Drawing 2]

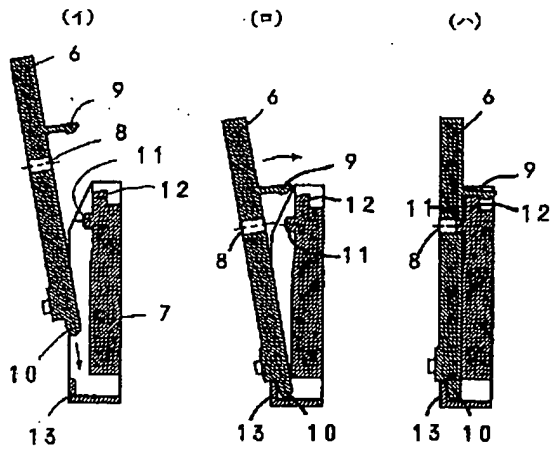


[Drawing 3]



[Drawing 4]





[Translation done.]

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(71)Applicant : SEIKO EPSON CORP

(22)Date of filing : 03.08.2001

(72)Inventor : KIGUCHI HIROSHI  
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(30)Priority

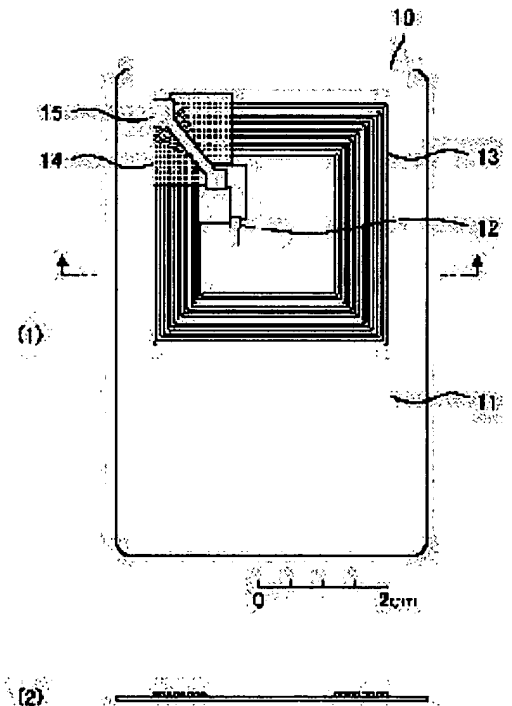
Priority number : 2000402952 Priority date : 28.12.2000 Priority country : JP

## (54) METHOD AND DEVICE FOR MANUFACTURING ELEMENT

(57)Abstract:

PROBLEM TO BE SOLVED: To provide element manufacturing method/device with which droplets do not unnecessarily spread to form a fine wiring by using an inexpensive functional liquid feeding method.

SOLUTION: The method for forming the element of an RFID tag 10 is provided with a process for patterning multiple parts where affinities with respect to functional liquid differ, and a process for selectively giving functional liquid to a part where affinity with respect to functional liquid is high in the multiple parts on an element forming substrate 11. The process for forming the multiple parts of different affinities with respect to functional liquid has a process for giving an organosiloxane film onto the substrate and exposing it through an optical mask.



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**CLAIMS**


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[Claim(s)]

[Claim 1] An element manufacture method of being the method of giving a functional liquid to an element formation substrate and manufacturing an element, and having a process which carries out patterning of two or more portions from which compatibility over said functional liquid differs mutually on said element formation substrate, and a process to which compatibility over said functional liquid gives said functional liquid selectively to a high portion among said two or more portions.

[Claim 2] It is the element manufacture method which is a liquid containing a metal with which said element formation substrate is a substrate of an RF-ID tag in claim 1, and said functional liquid forms an antenna of said RF-ID tag.

[Claim 3] A process which forms two or more portions from which compatibility over said functional liquid differs mutually in claim 1 or claim 2 is the element manufacture method of having a process which gives the ORGANO siloxane film on a substrate, and a process which said ORGANO siloxane film is made exposing through an optical mask.

[Claim 4] A process which forms two or more portions from which compatibility over said functional liquid differs mutually in claim 1 or claim 2 is the element manufacture method of having a process which gives a fluoro alkyl silane film on a substrate, and a process which said fluoro alkyl silane film is made exposing through an optical mask.

[Claim 5] An element manufacture method of being the method of giving a functional liquid to an element formation substrate and manufacturing an element, and having a process which carries out patterning of the bank which prevents extravasation of said functional liquid on said element formation substrate, and a process which gives said functional liquid selectively in said bank.

[Claim 6] The element manufacturing installation which is equipment which gives a functional liquid to an element formation substrate and manufactures an element, and was equipped with patterning processing equipment which carries out patterning of two or more portions from which compatibility over said functional liquid differs mutually, and functional liquid grant equipment which gives said functional liquid selectively into a portion with high compatibility over said functional liquid among two or more of said portions on said element formation substrate.

[Claim 7] It is the element manufacturing installation which is a liquid containing a metal with which said element formation substrate is a substrate of an RF-ID tag in claim 6, and said functional liquid forms an antenna of said RF-ID tag.

[Claim 8] Patterning processing equipment which forms two or more portions from which compatibility over said functional liquid differs mutually in claim 6 is an element manufacturing installation equipped with sensitive-material grant equipment which gives the ORGANO siloxane film on a substrate, and an aligner which said ORGANO siloxane film is made to expose through an optical mask.

[Claim 9] Patterning processing equipment which forms two or more portions from which compatibility over said functional liquid differs mutually in claim 6 is an element manufacturing installation equipped with sensitive-material grant equipment which gives a fluoro alkyl silane film on a substrate, and an aligner which said fluoro alkyl silane film is made to expose through an optical mask.

[Claim 10] An element manufacturing installation equipped with patterning processing equipment which is equipment which gives a functional liquid to an element formation substrate and manufactures an element, and carries out patterning of the bank which prevents extravasation of said functional liquid on said element formation substrate, and functional liquid grant equipment which gives said functional liquid selectively in said bank.

[Claim 11] An element manufacture method of being the method of giving a metal content liquid to an element formation substrate, and manufacturing an element, and having a process which forms a hole in said element formation substrate, and a process which gives said metal content liquid in said hole.

[Claim 12] Said hole is the element manufacture method currently formed in a location where terminals of two or more

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electrical circuit elements differ mutually [ the thickness direction of a substrate ] in claim 11.

[Claim 13] It is the element manufacture method that a metal content liquid to which multilayer structure which said substrate equipped with two or more electrical circuit layers and an insulating layer between each electrical circuit layer in claim 12 was given by nothing and said hole makes possible electric conduction between electrical circuits of each class.

[Claim 14] It is the element manufacture method by which is a long picture-like and two or more formation is carried out mostly at parallel that said hole extends in the fixed direction of a substrate side in claim 11.

[Claim 15] An element manufacturing installation which has processing equipment which is equipment which gives a metal content liquid to an element formation substrate, and manufactures an element, and forms a hole in said element formation substrate, and liquid grant equipment which gives said metal content liquid in said hole.

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DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to amelioration of the method and equipment which form an element by starting the element manufacture method and a manufacturing installation, especially forming the pattern of arbitration on a substrate using functional liquid grant equipments, such as an ink jet type recording device.

[0002]

[Description of the Prior Art] The circuit element of a semiconductor device and others forms a circuit pattern and a circuit pattern on silicon, glass, and the substrate of PET (polyethylene terephthalate) and others, and is manufactured. Conventionally, for example, the lithography method is used for manufacture of such an element. This lithography method gives the sensitization material called a resist on a substrate, glares and develops a circuit pattern, drives a metal ion etc. into this, and forms a circuit pattern. This lithography method needed large-scale equipment and a complicated process, and was high. [ of the manufacturing cost ]

[0003] Moreover, the method by etching is used as the formation method of wiring. This method sticks a metallic foil on a substrate front face, and it gives resist resin further, it carries out patterning by a photolithography etc., and it carries out etching clearance of the metallic foil of the portion from which the resist was removed. However, this etching method has the problem that a manufacturing cost is high. Although the method of printing a circuit pattern was also proposed, it was set to Mr. one-article 1, and there was a problem that quality stability was missing.

[0004]

[Problem(s) to be Solved by the Invention] By the way, how to form discharge and a circuit pattern for a metal content liquid on a substrate instead of ink using the recording head of an ink jet type can be considered. For example, 400dpi and since the resolution of this ink jet type recording head is detailed, if the regurgitation of the functional liquid can be carried out from each nozzle hole, it will not require equipment like a chip fabrication factory, but will be considered that it can form the pattern of arbitration by the width of face of mum order.

[0005] However, when the drop breathed out by the ink jet method reaches a substrate front face, a drop spreads greatly on a substrate front face, or the configuration of a drop remains in the outline of a circuit pattern as it is, and there is a problem that irregularity will be made.

[0006] Moreover, the method and equipment which form efficiently wiring of the solid which was equipped with two or more layers and connected the electrical circuit of each class mutually did not exist conventionally.

[0007] This invention aims at a drop getting wet superfluously, and not spreading using the functional low cost liquid grant method, but offering the element manufacture method and manufacturing installation of detailed wiring which can be formed.

[0008] Moreover, it aims at offering the method and equipment which form the element equipped with solid wiring efficiently.

[0009]

[Means for Solving the Problem] In order to solve the above-mentioned technical problem, a manufacture method of this invention is a method of giving a functional liquid to an element formation substrate and manufacturing an element, and it has a process which carries out patterning of two or more portions from which compatibility over said functional liquid differs mutually on said element formation substrate, and a process to which compatibility over said functional liquid gives said functional liquid selectively to a high portion among said two or more portions.

[0010] In an above-mentioned manufacture method, said element formation substrate is a substrate of an RF-ID tag, and, as for said functional liquid, it is desirable that it is a liquid containing a metal which forms an antenna of said RF-ID tag.

[0011] Moreover, as for a process which forms two or more portions from which compatibility over said functional liquid differs mutually, in an above-mentioned manufacture method, it is desirable to have a process which gives the ORGANO siloxane film on a substrate, and a process which said ORGANO siloxane film is made to expose through an optical mask.

[0012] Moreover, as for a process which forms two or more portions from which compatibility over said functional liquid differs mutually, in an above-mentioned manufacture method, it is desirable to have a process which gives a fluoro alkyl silane film on a substrate, and a process which said fluoro alkyl silane film is made to expose through an optical mask.

[0013] Moreover, other manufacture methods of this invention are methods of giving a functional liquid to an element formation substrate and manufacturing an element, and have a process which carries out patterning of the bank which prevents extravasation of said functional liquid on said element formation substrate, and a process which gives said functional liquid selectively in said bank.

[0014] A manufacturing installation of this invention is equipment which gives a functional liquid to an element formation substrate and manufactures an element, and is equipped with patterning processing equipment which carries out patterning of two or more portions from which compatibility over said functional liquid differs mutually, and functional liquid grant equipment which gives said functional liquid selectively into a portion with high compatibility over said functional liquid among two or more of said portions on said element formation substrate.

[0015] In the above-mentioned manufacturing installation, said element formation substrate is a substrate of an RF-ID tag, and, as for said functional liquid, it is desirable that it is a liquid containing a metal which forms an antenna of said RF-ID tag.

[0016] Moreover, as for patterning processing equipment which forms two or more portions from which compatibility over said functional liquid differs mutually, in the above-mentioned manufacturing installation, it is desirable to have sensitive-material grant equipment which gives the ORGANO siloxane film on a substrate, and an aligner which said ORGANO siloxane film is made to expose through an optical mask.

[0017] Moreover, as for patterning processing equipment which forms two or more portions from which compatibility over said functional liquid differs mutually, in an above-mentioned manufacture method, it is desirable to have sensitive-material grant equipment which gives a fluoro alkyl silane film on a substrate, and an aligner which said fluoro alkyl silane film is made to expose through an optical mask.

[0018] Other manufacturing installations of this invention are equipment which gives a functional liquid to an element formation substrate and manufactures an element, and are equipped with patterning processing equipment which carries out patterning of the bank which prevents extravasation of said functional liquid on said element formation substrate, and functional liquid grant equipment which gives said functional liquid selectively in said bank.

[0019] Other manufacture methods of this invention are methods of giving a metal content liquid to an element formation substrate, and manufacturing an element, and have a process which forms a hole in said element formation substrate, and a process which gives said metal content liquid in said hole.

[0020] As for said hole, in an above-mentioned manufacture method, it is desirable to be formed in a location where terminals of two or more electrical circuit elements differ mutually [ the thickness direction of a substrate ].

[0021] As for said substrate, in an above-mentioned manufacture method, it is desirable for a metal content liquid to which multilayer structure equipped with two or more electrical circuit layers and an insulating layer between each electrical circuit layer was given by nothing and said hole to make possible electric conduction between electrical circuits of each class.

[0022] In an above-mentioned manufacture method, said hole has the shape of a long picture prolonged in the fixed direction of a substrate side, and it is desirable to carry out two or more formation mostly at parallel.

[0023] Other manufacturing installations of this invention are equipment which gives a metal content liquid to an element formation substrate, and manufactures an element, and have processing equipment which forms a hole in said element formation substrate, and liquid grant equipment which gives said metal content liquid in said hole.

[0024]

[Embodiment of the Invention] Hereafter, the gestalt of operation of this invention is explained with reference to a drawing.

[0025] Especially a <operation gestalt of \*\* 1st> book operation gestalt explains taking the case of the case where the antenna of a RFID (Radio Frequency Identification) tag is formed.

[0026] (Structure of an RF-ID tag) An RF-ID tag is an electronic circuitry used with the so-called electric wave method recognition system. This system consists of three portions of data-processing-system \*\*, such as a transponder (transceiver machine) called (1 "a tag"), (2) tag readers, and (3) computers.

[0027] A tag reader is equipped with the electronic equipment section and an antenna, and sends the electric wave for tag starting, and receives the electric wave signal from a tag. As for the received data, check and decoding are performed by the electronic equipment section.

[0028] A tag has the section of memory where a recognition code and other data are saved in this IC including IC and an antenna. The content of this memory is transmitted by the electric wave, when a chip will be in operating state (to tag reader).

[0029] In many RFID systems, a tag reader emits an electric wave to a certain zone decided by system use frequency and size of an antenna. If one tag passes through this zone, that tag will detect the electric wave from a tag reader, and will transmit the data stored in the tag.

[0030] If the data from a tag is received, a tag reader will decode data and will determine whether the data is still more effective. If data is effective, it will be transmitted to data processing system, such as a computer.

[0031] There are two kinds of tags, an active mold and a passive mold. An active tag operates with the power of the dc-battery which connected or was contained inside. An active mold has the profitableness which can lessen the supply voltage of a tag reader, and, generally a long read distance is possible for it. A passive tag does not need a separate external power, but operating power is obtained from the energy which a tag reader discharges. A passive tag is quite smaller [ than an active tag ] light, and its price is also cheap, and it does not have a limit of a life substantially, either.

[0032] (Configuration of an RF-ID tag) Drawing 1 is the plan (1) and its view cross section (2) of the RF-ID tag manufactured by the manufacture method concerning the operation gestalt of this invention. As shown in drawing 1 (1), RF-ID tag 10 is equipped with the curled form antenna 13 connected to IC12 and IC which were prepared on the PET substrate 11, the solder resist 14 formed in the part on an antenna, and the Ag line 15 which is formed on a solder resist, connects the ends of an antenna, and is made into the shape of a loop.

[0033] An antenna 13 keeps a predetermined gap mutually on a substrate 11, and is formed in the curled form, and each circumference section of the whorl concerned connects it with the adjoining circumference section too hastily. In order to make it each circumference section not connect too hastily, it is required to arrange at accuracy the metal which forms an antenna in the predetermined location on a substrate. In case the regurgitation of the liquid containing the metal which constitutes an antenna is carried out on a substrate with an ink jet method, it is necessary to make it irregularity not remain in the outline of an antenna.

[0034] (The manufacture method of an RF-ID tag) With this operation gestalt, after carrying out patterning formation of two or more portions different mutually [ compatibility ] to the liquid containing the metal which constitutes an antenna, the regurgitation of the above-mentioned liquid is carried out with an ink jet method. It is desirable for two or more portions different mutually [ compatibility ] here to be the combination of a portion with high compatibility and the portion of non-compatibility. Specifically use as a portion with high compatibility the portion which should form an antenna, and let the portion which should form an antenna and which does not come out be the portion of non-compatibility. Since the liquids (colloidal solutions, such as Au, Ag, and Cu etc.) containing the metal which more specifically constitutes the above-mentioned antenna are water liquids, they make hydrophilicity the portion which should form an antenna and make hydrophobicity the portion which should form an antenna and which does not come out.

[0035] Drawing 2 is a manufacturing process cross section explaining the manufacture method of the above-mentioned RF-ID tag. There is a method using the ORGANO siloxane as one of the methods of carrying out patterning of the substrate to two or more portions from which compatibility differs as mentioned above. For example, the ORGANO siloxane which mixed titanium oxide (TiO<sub>2</sub>) as a photocatalyst is applied with spin coating or an ink jet method on the PET substrate shown in drawing 2 (1), and carries out ultraviolet-rays exposure with a high-pressure mercury lamp with a wavelength of 254nm through an optical mask. The portion which this exposed among the hydrophobic ORGANO siloxanes carries out hydrophilization.

[0036] Furthermore, wiring drawing of the Au colloidal solution (the "perfect gold" by the vacuum metallurgy company) is carried out with an ink jet method. The antenna wiring 13 of the gold which shows this to drawing 2 (2) by BEKU for 30 minutes in atmospheric air at 120 degrees C can be obtained. Furthermore, in order to obtain an RF-ID tag, as shown in drawing 2 (3), IC mounting is performed, and as further shown in drawing 2 (4), a solder resist 14 is applied with an ink jet method. Furthermore, by applying Ag colloidal solution (the "perfect silver" by the vacuum metallurgy company) with an ink jet method, the Ag line 15 which connects the ends of an antenna 13 and is made into the shape of a loop is formed, and RF-ID tag 10 shown in drawing 1 is manufactured.

[0037] In addition, although it may be difficulty in the resolution of a current ink jet method to form IC12 of the magnitude of a graphic display with an ink jet method, if bigger IC is sufficient, realizing with an ink jet method is also possible. Thus, by performing all processes with an ink jet method, manufacture effectiveness and the cycle time

improve by leaps and bounds. Moreover, by raising the manufacture effectiveness of an RF-ID tag and reducing cost, a very cheap RF-ID tag can be manufactured and utilization of a disposable tag also becomes possible.

[0038] Although the portion which should apply the ORGANO siloxane all over a substrate and should carry out hydrophilization was made to expose in the above-mentioned example, it is not necessary to necessarily apply the ORGANO siloxane all over a substrate. That is, what is necessary is to carry out the hydrophilization of the portion which should form an antenna, and just to carry out hydrophobing of near a boundary with the portion which should form an antenna among the portions which should form an antenna, and which do not come out, since what is necessary is for a metal content liquid to stop at the portion which should form an antenna, and just to make it a metal content liquid not stop at the portion which should form an antenna and which does not come out, when a metal content liquid breathes out by the ink-jet method into the portion which form an antenna. Therefore, it is not necessary to apply the ORGANO siloxane to the location distant from the boundary with the portion which should form an antenna among the portions which should form an antenna, and which do not come out enough.

[0039] There is a method using a fluoro alkyl silane (FAS) as other methods of carrying out relative-degree-of-intimacy water patterning of a substrate. Hydrophilization is carried out when a fluoro alkyl silane also irradiates ultraviolet rays. When a suitable photocatalyst is used, in addition, it is desirable.

[0040] Moreover, the material which constitutes antenna wiring 13 grade may use not only this but the Cu-SOM liquid for example, by the vacuum metallurgy company, the nano paste of HARIMA CHEMICALS, Inc., etc. The former is suitable for formation of copper wiring, and the latter has the property that detailed metal wiring can be performed in 150 degrees C - about 200 degrees C low-temperature BEKU. Moreover, conductive polymers, such as not only a metal but PEDT (polyethylene-dioxythiophene), are sufficient. In this case, the conductive polymer which carried out melting is applied to the field which carries out patterning of two or more fields where the compatibility over the conductive polymer concerned differs, among those is affinitive.

[0041] In order to fix a functional liquid to the request location of a substrate, there is the method of forming on a substrate the bank which prevents the extravasation of a functional liquid as a method of further others of carrying out patterning processing of the substrate. It is advantageous to thick-film-ize wiring, although the element thickness of a part will produce this method in bank height and processing of flattening will be needed the regurgitation of a functional liquid, and after BEKU.

[0042] A <operation gestalt of \*\* 2nd> micro-lens array (MLA) carries out array formation of many detailed lenses on a substrate, and is used for a liquid crystal display panel, a projector, a scanner, etc. In order to form this micro-lens array, how to carry out the regurgitation of the epoxy resin of the transparence which is the material of a lens etc. with an ink jet method on a substrate can be considered. The configuration and array of a lens can be made more into high degree of accuracy by processing the lens formation section on this substrate so that it may have the above-mentioned resin and compatibility, and making the agenesis section of a lens into the above-mentioned resin and non-compatibility.

[0043] In addition, the method not only by an ink jet method but the dispenser is sufficient as the grant method of a functional liquid.

[0044] Moreover, the substrate which forms the element of this operation gestalt can be formed not only on PET, glass, and silicon but on paper, and can also be used as a seal.

[0045] According to the manufacture method of this operation gestalt, since a functional liquid is selectively applied only to a required portion, compared with the case where apply to the whole surface and it etches, there is no futility of a material and the cost can be cut down.

[0046] <Operation gestalt of \*\* 3rd> drawing 3 is the outline perspective diagram of the loudspeaker manufactured by the manufacture method of this operation gestalt. As shown in drawing 3, by giving the liquid which distributed the metal particle on a diaphragm 31 by the ink jet, a coil 32 is formed, the magnetic-flux generating means 33, such as a magnet, are countered, and this diaphragm 31 is arranged. By passing analog signal generating and the signal current from an amplifying circuit 34 in the coil 32 on a diaphragm 31, magnetic flux occurs also from the coil 32 concerned, a diaphragm 31 vibrates by the interaction with the magnetic-flux generating means 33, and a sound occurs. A plane is sufficient as this diaphragm 31 so that it may illustrate, and a cone form is sufficient as it. Furthermore, by covering the coil forming face on a diaphragm 31 with a waterproof film etc., a waterproof loudspeaker can also be formed in a thin form.

[0047] <Operation gestalt of \*\* 4th> drawing 4 is the transverse-plane perspective drawing at the time of forming electric wiring in a wall surface by the element manufacture method of this operation gestalt. The power supply terminal 42, the telephone terminal 44, and the terminal 46 grade of cable television are prepared in the unit wall 41 for residences shown in drawing. An electric wire 43 is connected to a power supply terminal 42, signal lines 45 and 47 are connected to the terminal of a telephone or cable television, and power and a signal can be outputted now, respectively.

Even if the amount of [, such as an electric wire code, ] outcrop is not by connecting a flat TV 48 to this unit wall 41, and connecting anchoring, an electric wire 43, and a signal line 47 to this flat TV 48, a broadcast signal can be received and an image and voice can be outputted.

[0048] These electric wire 43 and signal lines 45 and 47 can give the liquid which distributed the metal particle by the ink jet to the predetermined location of a unit wall surface, and can form it by making it dry and harden.

[0049] <Operation gestalt of \*\* 5th> drawing 5 is the manufacturing process cross section of the element equipped with the solid wiring manufactured by the element manufacture method of this operation gestalt. Surface treatment required for the same insulating substrate 51 as what is used with the operation gestalt 1 is performed (S1), and the electrical circuit 52 of two or more layers is formed in a substrate (S2). Here, the electrical circuit 52 of a total of two layers is formed by a predetermined pattern's giving the liquid which made substrate both sides distribute a metal particle by the ink jet, and drying and stiffening it. The method of forming the electrical circuit 52 of two or more layers is good also as having formed the electrical circuit of not only this but one layer upwards, forming an insulating layer, and forming the electrical circuit of the following layer on it.

[0050] Next, a hole 53 is made to form in a substrate (S3). This hole 53 is for aiming at the electric flow between the electrical circuits 52 of two or more layers, and it is exposed to the location where the terminal of the electrical circuit 52 of the above-mentioned two or more layers differs on the wall surface of a hole 53 in the thickness directions of a substrate. It may not penetrate from one field of a substrate to the field of another side, and a hole 53 may not arrive at the field of another side, and may not be penetrated. The formation method of a hole 53 applies for example, a photosensitive material, and a predetermined pattern may be made exposed, and negatives may be developed to it, or it may put and etch the mask of a predetermined pattern into it. The diameter of a hole 53 is set to 100 micrometers.

[0051] Next, an ink jet gives the metal content liquid 54 in this hole 53 (S4). Under the present circumstances, it is desirable to perform \*\*\*\* processing to the wall surface of a hole 53 beforehand according to the property of a metal content liquid. By drying and stiffening the given liquid 54, it can be made to flow through the electrical circuit 52 of two or more layers mutually, and solid wiring can be formed. In addition, since the conductivity of each class should just be secured, in the hole 53 after hardening, it is good also as a condition of filling up with the metal thoroughly, and good for it also as a condition (S5) that a metal membrane 55 is formed only in the wall surface of a hole 53.

[0052] <Operation gestalt of \*\* 6th> drawing 6 is the plan (a) and its B-B line cross section (b) of the anisotropy electric conduction film 61 manufactured by the element manufacture method of this operation gestalt. Two or more holes 62 of the shape of a long picture prolonged in the fixed direction of film planes, such as silicone rubber and polyester film, are mutually formed mostly in parallel, and an ink jet gives the liquid which distributed the metal particle after performing required surface treatment in a hole 62. If this is dried and stiffened, an electric flow can be performed in the fixed direction of a film plane, and the anisotropy electric conduction film 61 insulated can be manufactured in this and the direction of a right angle. A hole 62 is good also as what is penetrated in the thickness direction of a film, as shown in drawing 6 (b), and it may be formed as a slot which is not penetrated.

[0053] <Manufacturing installation> drawing 7 is the outline perspective diagram of the element manufacturing installation used for the above-mentioned manufacture method. The element manufacturing installation 100 is equipped with functional ink jet-type liquid grant equipment, and is equipped with the ink jet head group 1, the direction driving shaft 4 of X, the direction guide shaft 5 of Y, a control unit 6, the installation base 7, the cleaning device section 8, and a pedestal 9.

[0054] The ink jet head group 1 is equipped with the ink jet arm head which breathes out functional predetermined liquids (a metal content liquid, sensitive material, etc.) from a nozzle (delivery), and is given to a substrate.

[0055] The installation base 7 makes the substrates 101 (PET, glass, silicon, paper, etc.) to which a functional liquid is given by this grant equipment lay, and is equipped with the device which fixes this record medium to a criteria location.

[0056] The direction drive motor 2 of X is connected to the direction driving shaft 4 of X. The direction drive motor 2 of X is a stepping motor etc., and if the driving signal of X shaft orientations is supplied from a control unit 6, it will rotate the direction driving shaft 4 of X. If the direction driving shaft 4 of X is rotated, the ink jet head group 1 will move to X shaft orientations.

[0057] The direction guide shaft 5 of Y is being fixed so that it may not move to a pedestal 9. The installation base 7 is equipped with the direction drive motor 3 of Y. The direction drive motor 3 of Y is a stepping motor etc., and if the driving signal of Y shaft orientations is supplied from a control unit 6, it will move the installation base 7 to Y shaft orientations.

[0058] A control circuit 6 supplies the voltage for regurgitation control of a drop to each arm head of the ink jet head group 1. Moreover, the driving pulse signal which controls migration of Y shaft orientations of the installation base 7 for the driving pulse signal which controls migration of X shaft orientations of the ink jet head group 1 to the direction

drive motor 2 of X to the direction drive motor 3 of Y is supplied.

[0059] The cleaning device section 8 is equipped with the device which cleans the ink jet head group 1. The cleaning device section 8 is equipped with the drive motor of the direction of Y which is not illustrated. By actuation of the drive motor of this direction of Y, the cleaning device 8 moves in accordance with the direction guide shaft 5 of Y. Migration of the cleaning device 8 is also controlled by the control unit 6.

[0060] In addition, although the aligner which performs relative-degree-of-intimacy water patterning etc. is not shown in drawing 7, the well-known aligner using a mercury lamp etc. is applicable to the manufacture method of this operation gestalt.

[Effect of the Invention] According to this invention, using the functional low cost liquid grant method, a drop gets wet superfluously, and does not spread but can offer the element manufacture method and manufacturing installation of detailed wiring which can be formed. Moreover, the method and equipment which form the element equipped with solid wiring efficiently can be offered.

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[Translation done.]

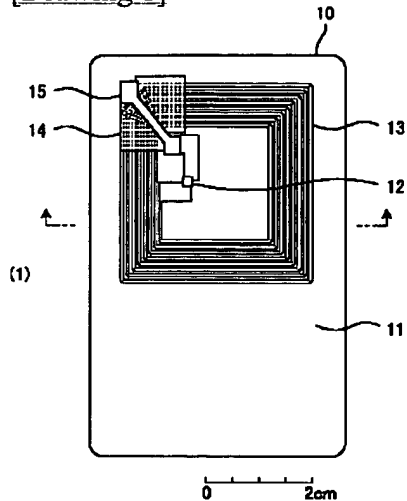
## \* NOTICES \*

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1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. \*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

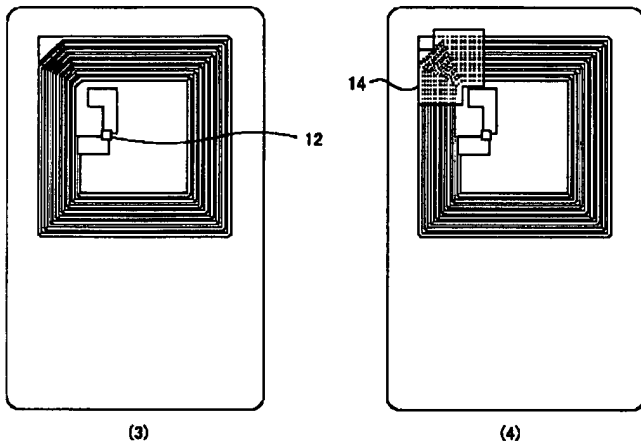
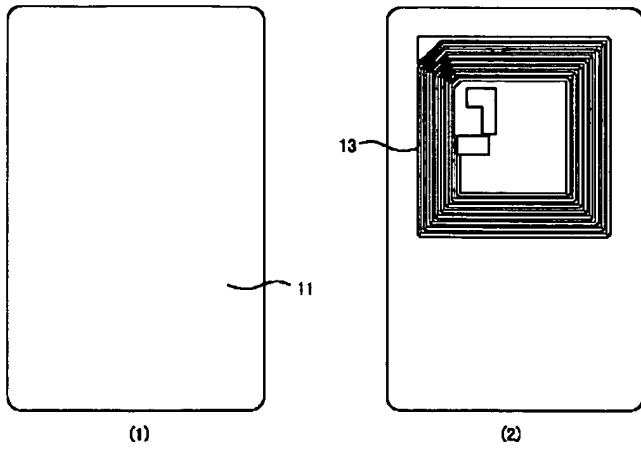
## DRAWINGS

[Drawing 1]

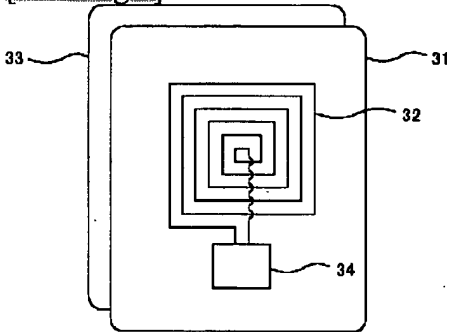


[Drawing 2]

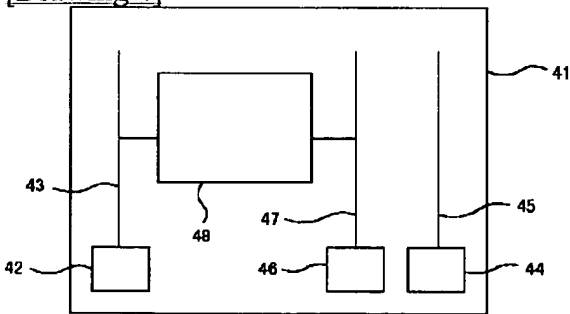




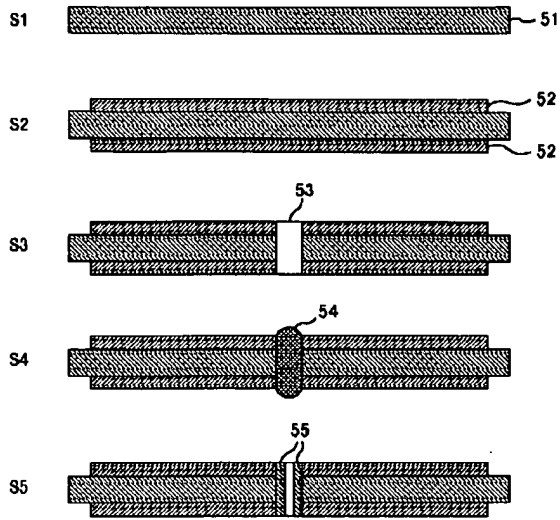
[Drawing 3]



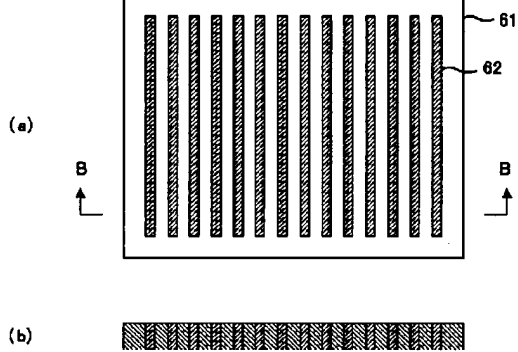
[Drawing 4]



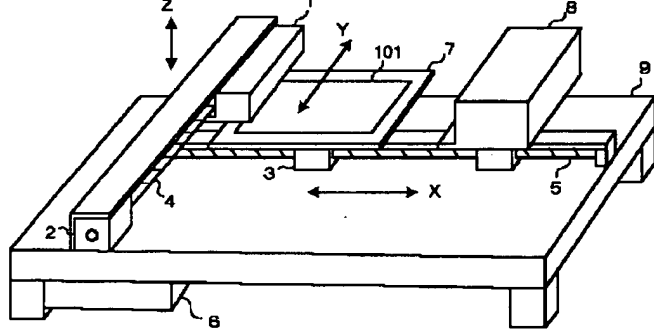
[Drawing 5]



[Drawing 6]



[Drawing 7]



[Translation done.]



## 【特許請求の範囲】

【請求項 1】 印字桁方向に往復移動しながら印字を行うハンマバンクと、ハンマバンクの前面を走行するインクリボンと、インクリボンと印字用紙の間にインクリボンによる印字用紙の汚れを防止するためのリボンマスクを備え、このリボンマスクをハンマバンクに取り付けたドットインパクトプリンタにおいて、前記リボンマスクの往復移動方向両端に、位置決め穴と、その位置決め穴の方向に突起を持つフックを有するモールド係止部品を固定し、かつ前記ハンマバンクの往復移動方向両端に、前記リボンマスク両端に固定されたモールド係止部品の位置決め穴と係合する位置決め突起と、前記モールド係止部品のフックを引っかけるための壁部と、モールド係止部品の先端を押さえるための下端前面の壁部を有するホルダを取り付けたことを特徴とするドットインパクトプリンタ。

【請求項 2】 ホルダをハンマバンクへ取り付ける際の位置決め手段を、ハンマバンクに設けた印字ピンの位置調整のための基準位置穴に係合する突起形状にしたことを特徴とする請求項 1 記載のドットインパクトプリンタ。

## 【発明の詳細な説明】

## 【0001】

【発明の属する技術分野】本発明は、コンピュータ等の出力装置として用いられるドットインパクトプリンタに関するものである。

## 【0002】

【従来の技術】図 1 は従来のドットインパクトプリンタのハンマバンクを示すもので、リボンマスク 1 は、ハンマバンク 2 にネジ 3 で固定されている。

【0003】そしてこのドットインパクトプリンタのハンマバンク 2 に取り付けられるリボンマスク 1 は、印字用紙とインクリボンの間にあり、インクリボンによる印字用紙の汚れを防止することを目的としている。

【0004】またリボンマスク 1 は薄いステンレス板で作られており、印字用紙やインクリボンとの摩擦により磨滅してしまうため、定期的な保守点検や交換作業を必要としていた。

【0005】しかし、従来のドットインパクトプリンタのリボンマスク 1 は、上記のように、ハンマバンク 2 にネジ 3 で固定されているため、リボンマスク 1 の交換作業はネジ 3 を外す必要があり、ハンマバンク 2 をプリンタに固定したままではその作業は非常に困難である。またハンマバンク 2 にリボンマスク 1 を取り付ける際には、ハンマバンク 2 の複数の印字ピン 4 の位置と、リボンマスク 1 に開けられた印字ピンを通すための窓穴 5 の位置を合わせながらネジ 3 で固定する必要があり取付作業に手間を取っていた。

## 【0006】

【発明が解決しようとする課題】そこで本発明は、ハン

マバンクを固定したまま、リボンマスクを容易に短時間で着脱でき、また印字ピンの位置とリボンマスクの窓穴の位置を正確に決定できるドットインパクトプリンタを提供するものである。

## 【0007】

【課題を解決するための手段】本発明は上記の課題を解決するためになされたもので、リボンマスクの往復移動方向両端に、位置決め穴とその位置決め穴の方向に突起を持つフックを有するモールド係止部品を固定し、ハンマバンクの往復移動方向の両端に、前記リボンマスク両端のモールド係止部品の位置決め穴と係合する位置決め突起と、モールド係止部品のフックを引っかけるための壁部と、モールド係止部品の先端を押さえるための下端前面の壁部を有するホルダを設けたものである。

【0008】またホルダをハンマバンクに取り付ける際、印字ピンとリボンマスクの窓穴の位置を正確に合わせるため、ハンマバンクの印字ピンの位置調整用基準穴を、ホルダの取り付け基準の位置決め穴に兼用することも有効な手段である。

## 【0009】

【作用】上記のように構成されたドットインパクトプリンタでは、モールド係止部品の先端をホルダ下端前面の内側に挿入し、モールド係止部品の位置決め穴とホルダの位置決め突起に係合させ、かつモールド係止部品に設けられたフックをホルダに引っかけることにより、ハンマバンクに対してリボンマスクが容易に取り付け可能となる。

【0010】また、モールド係止部品の上端をハンマバンクに対してリボンマスク側に倒し、上方に引き上げることで容易に取り外すことが可能である。さらにハンマバンクの印字ピンの位置調整用基準穴を、ホルダの取り付け基準の位置決め穴に兼用することにより、印字ピンとリボンマスクの窓穴の位置を正確に合わせることも可能となる。

## 【0011】

【発明の実施の形態】図 2 は本発明の一実施例の分解斜視図で、リボンマスク 1 の両端に、位置決め穴 8 とフック 9 を有するモールド係止部品 6 を固定し、ハンマバンク 2 の両端に、位置決め穴 8 と係合する位置決め突起 11 と、フック 9 を引っかけるための壁部 12 と、モールド係止部品 6 の先端 10 を押さえるための下端前面の壁部 13 を有するホルダ 7 を取り付けられている。

【0012】図 3 はホルダ 7 の異なる実施例を示すもので、この場合は、ハンマバンク 2 の印字ピン 4 の位置調整用基準穴 14 を、ホルダ 7 を取り付けの際の位置決め穴に兼用し、ホルダ 7 の取り付け基準突起 15 を係合させ、ネジ 16 で固定するようにしたものである。

【0013】図 4 はモールド係止部品 6 とホルダ 7 の取り付け方を示す説明図で、ホルダ 7 にモールド係止部品 6 を (イ)、(ロ)、(ハ) の順序で取り付けるもので

ある。

# 【0014】

【発明の効果】 以上のように、本発明によればハンマバンク 2 をプリンタに取り付けたままで、リボンマスク 1 の着脱を容易に行うことができ、しかもハンマバンク 2 の印字ピン 4 の位置と、リボンマスク 1 の窓穴の位置を正確に合わせることができる。

# 【図面の簡単な説明】

【図 1】 従来のドットインパクトプリンタのハンマバンク及びリボンマスクの構成を示す分解斜視図。

【図 2】 本発明の実施例を示す分解斜視図。

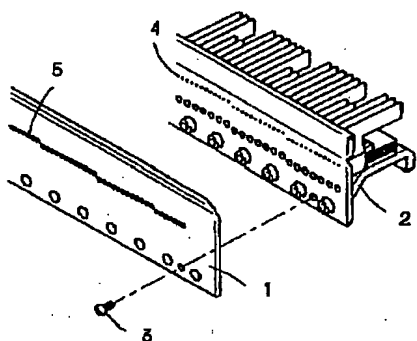
【図 3】 本発明の他の実施例を示す分解斜視図。

【図 4】 モールド係止部品のホルダへの取付順序を示す説明図。

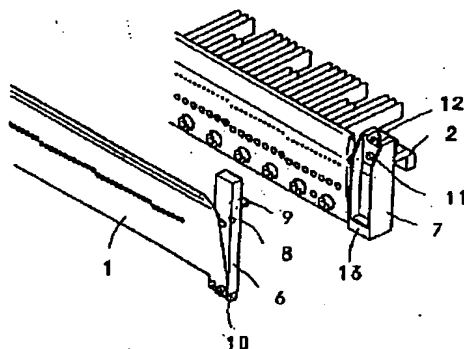
# 【符号の説明】

- |    |           |
|----|-----------|
| 1  | リボンマスク    |
| 2  | ハンマバンク    |
| 3  | ネジ        |
| 4  | 印字ピン      |
| 5  | リボンマスクの窓穴 |
| 6  | モールド係止部品  |
| 7  | ホルダ       |
| 8  | 位置決め穴     |
| 9  | フック       |
| 10 | 先端        |
| 11 | 位置決め突起    |
| 12 | 壁部        |
| 13 | 壁部        |
| 14 | 基準位置穴     |

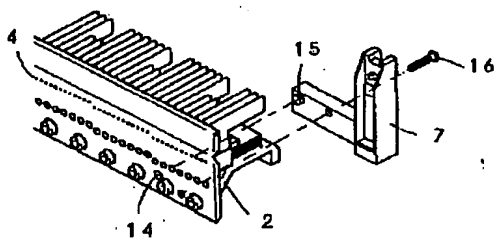
【図 1】



【図 2】



【図 3】



【図 4】

